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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,110	07/28/2006	Julien Sainte Catherine	MBL-003	2890
31281 7590 02/05/2010 McLELAND PATENT LAW OFFICE, P.L.L.C. 11320 RANDOM HILLS ROAD SUITE 250 FAIRFAX, VA 22030				
EXAMINER				
MOWLA, GOLAM				
ART UNIT		PAPER NUMBER		
1795				
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02/05/2010		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/560,110

Applicant(s)

SAINTE CATHERINE ET AL.

Examiner

GOLAM MOWLA

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-20 is/are pending in the application.
- 4a) Of the above claim(s) 13-17, 19 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-12 and 18 is/are rejected.
- 7) ☒ Claim(s) 6 and 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/09/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/09/2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I in the reply filed on 11/16/2009 is acknowledged. The traversal is on the ground(s) that Groups I, II and III satisfy the requirement of unity of invention because they are linked by the single general inventive concept of providing an electron donor structure containing at least one type of conjugated polymer, and an electron acceptor structure containing at least one type of a tubular nanostructure. This is not found persuasive because Group I is directed to a device, whereas Group II is directed to process of manufacturing the device and Group III is directed to process of producing electricity using the device. Although the common technical feature between the groups is "an electron donor and acceptor structures wherein the electron acceptor structure containing at least one type of tubular nanostructure having at least one complexed or adsorbed pigment on its surface," this element cannot be a special technical feature under PCT rule 13.2 because the element is shown in the prior art. JP 2002-335004A discloses a device comprising an electron donor (paragraph 20) and acceptor structures wherein the electron acceptor structure containing at least one type of tubular nanostructure having at least one complexed or adsorbed pigment on its surface (paragraph 10-17 and 34).

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

2. Claims 6 and 7 are objected to because of the following informalities: claims 6-7 depend on cancelled claim 5. Since these claims depend on cancelled claims, they have not been treated on their merits. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 8-12 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamaguchi et al. (JP 2002-335004, refer to online machine translation).

Regarding claims 1 and 18, Yamaguchi et al. is directed to a device such as a photovoltaic cell ([0011]) (see also [0008-0009], [0020-0021], [0027-0041]). The reference discloses that the photovoltaic/solar cell comprises an electron donor structure containing at least one type of conjugated polymer ([0020]), and an electron acceptor structure containing at least one type of a tubular nanostructure ([0008-0009], [0017] and [0033-0035]), wherein said tubular nanostructure has a layer of at least one pigment (photosensitizer such as phthalocyanine, [0021] and [0035]) directly adsorbed on its outer periphery ([0035]), and at least one polymer (matrix resin) having an anchoring point on said layer of at least one pigment ([0028-0029] and [0038]).

Regarding claim 2, Yamaguchi further discloses that the tubular nanostructure is selected from the group consisting of straight Single-wall carbon nanotubes, straight

double-wall carbon nanotubes, straight multi-wall carbon nanotubes, bent Single-wall carbon nanotubes, bent double-wall carbon nanotubes, bent multi-wall carbon nanotubes (SWNT, DWNT and MWNT), and any mixture thereof ([0017]).

Regarding claims 3 and 8, Yamaguchi further discloses that the pigment is phthalocyanine ([0021]).

Regarding claim 9, Yamaguchi further discloses that the conjugated polymer is polythiophenes ([0020]).

Regarding claim 10, Yamaguchi further discloses that the tubular nanostructure functions as an electron acceptor structure mixed with a binding polymer ([0033] and [0038-0041]).

Regarding claim 11, Yamaguchi further discloses that the electron acceptor structure and electron donor structure are mutually discernible or form a composite structure ([0030] and [0038-0041])

Regarding claim 12, Yamaguchi further discloses that the device forms a PN heterojunction of a photovoltaic cell ([0032]).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi as applied to claim 1 above.

Applicant is directed above for complete discussion of Yamaguchi with respect to claim 1 above, which is incorporated herein. The reference further teaches that the diameter of the nanostructures is in the range of 5-250 nm ([0018]), and since the claimed range (0.5-200 nm) "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists (MPEP § 2144.05, In re Wertheim).

Correspondence/Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GOLAM MOWLA whose telephone number is (571) 270-5268. The examiner can normally be reached on M-Th, 0800-1800 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ALEXA NECKEL can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/G. M./
Examiner, Art Unit 1795

/Alexa D. Neckel/
Supervisory Patent Examiner, Art Unit 1795